

### REMARKS

Claim 2 has been amended to state that only  $R^1$  can represent a direct bond between X and the ether oxygen atom bonded to  $R^2$  in an effort to place Claim 2 in better form. Support for this amendment is found at page 4, lines 19-20 of the specification. This amendment is consistent with the arguments presented by Applicants throughout the prosecution of this case, does not necessitate further search by the Examiner and is believed to remove the basis for one of the rejections under 35 U.S.C. § 112 made in the above-identified Office Action. Entry of this amendment is therefore requested.

The present invention relates to a process for the production of ether (poly)isocyanates in which an ether (poly)amine is reacted with at least a stoichiometric amount of phosgene in the gas phase and to select isocyanates made by this process.

Claim 2 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants believe that the amendment made herein removes the basis for this rejection.

The basis for this rejection is that the direct bond between "X" and "O" is only viable when limited to  $R^1$ . The defining of  $R^2$  and  $R^3$  as direct bonds, where they can not be direct bonds, causes the claims to be confusing and indefinite.

Claim 2 as amended herein clearly states that only  $R^1$  can represent a direct bond. Applicants' amended claim language does therefore particularly and distinctly claim their invention in a manner which complies with the requirements of 35 U.S.C. § 112.

Withdrawal of this rejection is therefore respectfully requested.

Claims 1-4 remain rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specific basis for this rejection is the hydrolyzable chlorine content limitation.

Mo4532

- 3 -

It is stated in the Office Action that:

The examples provide support only for 24 ppm, 34 ppm, 43 ppm, 44 ppm, and 48 ppm. The position is taken that the examples do not provide support for values below 24 ppm or above 48 ppm or for ranges of values between the specified values. (at page 2, lines 10-13 of the Office Action)

Applicants would first point out that the limitation recited in their Claim 1 is "having a hydrolyzable chlorine content less than or equal to 48 ppm". The limitation recited in Claim 3 is "having a hydrolyzable chlorine content of no more than 43 ppm." That is, Applicants' claims **do not** claim hydrolyzable chlorine contents above 48 ppm.

Applicants would further note that the above-quoted position is contrary to the CCPA's holding in In re Eickmeyer, 202 USPQ 655 (CCPA 1979) in which it was held that:

... the limitation "at an elevated temperature of at least about 56°C." is fully described in appellant's specification and in the parent applications. (at page 663)

where the Applicants' Examples were done at temperatures of 56 and 80°C.

Withdrawal of this rejection is therefore requested.

Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lehmann et al (U.S. Patent 3,267,122) in view of Joulak et al (U.S. Patent 5,391,683) or Biskup et al (U.S. Patent 5,449,818) or Bischof et al (U.S. Patent 5,516,935). Applicants respectfully traverse this rejection.

Lehmann et al does not teach a gas phase phosgenation process for the production of ether isocyanates. Neither Joulak et al nor Bischof et al teaches or suggests that the disclosed gas phase phosgenation processes could be used to produce ether isocyanates.

Biskup et al teaches that aromatic amines in which an ether group is present could be used in the disclosed gas phase process for the production of aromatic diisocyanates **but does not teach or suggest** that the isocyanate produced by that process would retain such ether group. Nor would one skilled in the art expect it to be retained under the conditions present in a gas phase phosgenation process.

Mo4532

- 4 -

(See Declaration of Dr. Stutz submitted with previous response and the prior art teachings discussed therein.)

In the Office Action at paragraph 6, it is stated that the Declaration of Dr. Stutz is deemed insufficient to remove the art rejection. Two bases for criticism of Dr. Stutz' Declaration are given.

The first criticism is that the Declaration "fails to set forth sufficient rationale as to why the disclosure within Biskup et al. that ether groups may be present within the amine should be dismissed." (page 3, lines 2-4 of paragraph 6 of the Office Action)

Applicants would point out that they have **not** argued that the teaching of Biskup et al with respect to the presence of ether groups in the amine starting materials suitable for use in that reference process should be dismissed. Rather, Applicants have argued that simply because ether groups were present in the amine starting material **it can not be assumed** that those ether groups will be present in the phosgenation product. Dr. Stutz cited sections taken from Annalen der Chemie which teach that even though an ether group is present in the amine starting material, the phosgenation product **does not** contain the corresponding ether group - containing isocyanate in significant, recoverable amounts.

A proper rejection under 35 U.S.C. § 103 must have a **factual** basis. **Not** one of the cited references provides a factual basis for the Patent Office assumption that gas phase phosgenation of an ether-containing amine starting material will produce the corresponding ether-containing isocyanate in high yield and high purity.

The second criticism of Dr. Stutz' Declaration is that Dr. Stutz' statement that the present invention is not limited to a contact time of 0.5 to 5 seconds as is the Biskup et al process

... is not commensurate in scope with the claims, because the claims are completely silent with respect to any specified contact times, as a result, the instant process is open to being practiced using the 0.5 to 5 second contact time. (at page 3, line 18- page 4, line 2 of the Office Action)

Applicants would point out that it is the Biskup et al which teaches that contact time is critical to the reference process, not Applicants. Contrary to

Mo4532

Biskup et al's teaching. Applicants have found that it is **not necessary** to limit the contact time of phosgene with their required ether amine starting material.

An invention which does not require a feature taught to be critical by the prior art, can not be considered obvious in view of that prior art. Dr. Stutz' discussion of the fact that the critical contact time limitation of the Biskup et al process is not critical to the claimed process is therefore commensurate in scope with the claims of the present application.

It was also stated in the Office Action that:

Furthermore, the declarer fails to address the possibility that it is this disclosed contact time that permits the ether isocyanate to be produced in high yield. Therefore, in the absence of such discussion, it can be argued that this feature of Biskup et al. provides teaching as to how to obtain ether isocyanates in high yield. (at page 4, lines 2-5 of the Office Action)

Applicants submit that the above-quoted argument does not provide proper support for the rejection of their claims because Biskup et al **does not teach** that **ether isocyanates** are obtained in high yield by the disclosed process.

Applicants therefore continue to maintain that one of ordinary skill in the art reading the cited references in the context of what was known in the art at the time Applicants made their invention (as evidenced, for example, by the sections of Annalen der Chemie discussed in Dr. Stutz' Declaration) would not have expected gas phase phosgenation of ether amines to produce ether isocyanates in good yield, if at all, and high purity.

Absent a reasonable expectation of success, the suggested combination of the teachings of Lehmann et al, Joulak et al, Biskup et al and Bischof et al does not establish a proper *prima facie* case of obviousness.

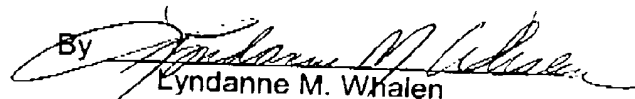
Withdrawal of this rejection is therefore requested.

Mo4532

- 6 -

In view of the above amendments and remarks, reconsideration and allowance of Claims 1-4 are respectfully requested.

Respectfully submitted,

By   
Lyndanne M. Whalen  
Attorney for Applicants  
Reg. No. 29,457

Bayer Corporation  
100 Bayer Road  
Pittsburgh, Pennsylvania 15205-9741  
PHONE: (412) 777-8347  
FACSIMILE PHONE NUMBER:  
412-777-8363  
s/rmc/lmw/0202

Mo4532

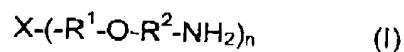
- 7 -

**VERSION WITH MARKINGS TO SHOW CHANGES**

**IN THE CLAIMS:**

Claim 2 has been amended as follows:

2. (Twice Amended) The process of Claim 1 in which ether (poly)amine a) is represented by the formula



in which

X

represents H, NH<sub>2</sub> or C(R<sup>3</sup>)<sub>4-n</sub>,

R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup>

each represents an optionally branched, an optionally substituted, or an optionally heteroatom-containing C<sub>1</sub>-C<sub>10</sub> alkyl, C<sub>3</sub>-C<sub>24</sub> cycloalkyl, C<sub>7</sub>-C<sub>24</sub> aralkyl, or a C<sub>6</sub>-C<sub>24</sub> aryl radical, or

R<sup>1</sup> represents a direct bond of X to the ether oxygen atom bonded to R<sup>2</sup>,

and

n

represents 1, 2 or 3.

Mo4532

- 8 -